CAN OUR VOCATIONAL SCHOOLS
HELP THE BLIND?

George L. Howeiler

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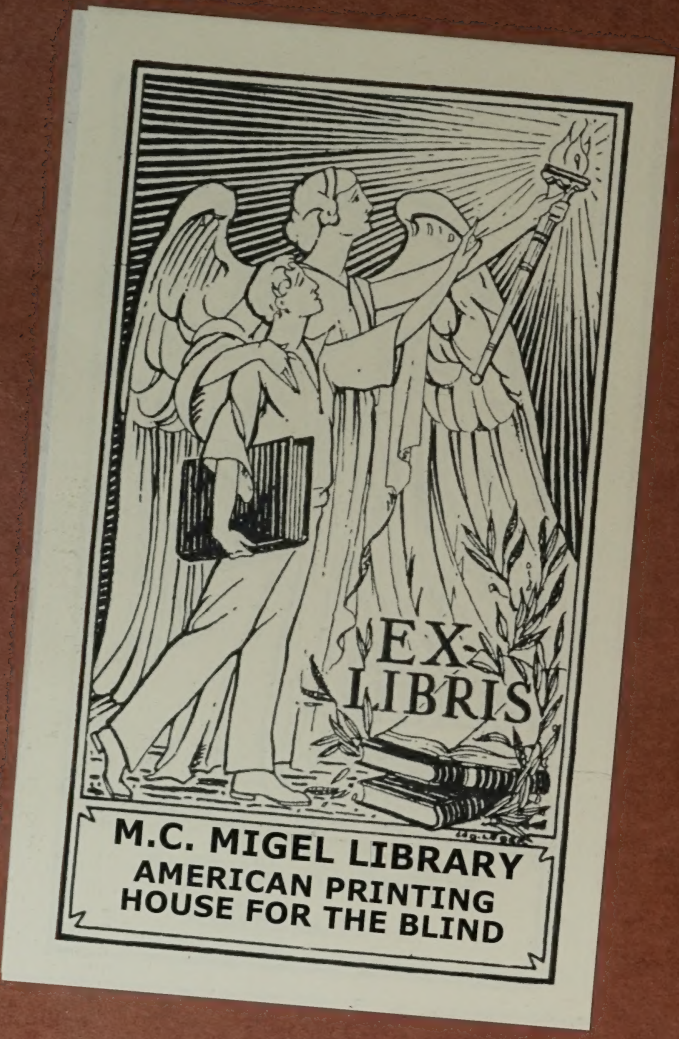
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source of such information. When this is not to be had, the information should be obtained directly from the pupil. The teacher should keep all such information clearly before him when setting up objectives and shaping his course of study.

The advent of the general shop has introduced new practical and worth-while objectives and goals. The world-wide depression engulfed all branches of education with the principle of stringent economy. All luxuries in education were cut and every activity called on to show justification for its inclusion in the curriculum. Every industrial-arts activity must show its contribution to general education. To what extent does any subject contribute what it purposes to contribute to the general education of the pupil? To what extent does industrial arts realize the objects and goals set up? Such questions can be answered adequately only by research study. When such a study is made by a teacher it may easily serve as a check as to the effectiveness of his subject and his teaching. Some of the foremost objectives of the course as organized in the schools herein mentioned, may be listed briefly as:

1. Exploratory
2. Handiman abilities
3. Avocational
4. Purchaser and consumer appreciations
5. Creativeness
6. Guidance
7. Social habits

The exploratory nature of the junior high school must be kept clearly in mind. On this level the concept of exploration should penetrate all subjects and should not be restricted solely to certain industrial courses where exploration is more dominant. Hence, justification of industrial arts can be based on the exploratory nature of its activities. The extent of realization of worthy goals previously listed as aims of Industrial Arts was checked in this study.

Conclusions

From consideration of the materials of this study certain well-defined conclusions are very apparent:

1. That the philosophies of general education and industrial arts are changing.
2. That greater emphasis is being placed on teacher efficiency.
3. That educational philosophy is influenced by social, economic, and political trends.
4. That modern educational methods tend to individualize each pupil.
5. That particularization of the pupil means the fitting of the curriculum to the child.
6. That teachers must eventually inspire, guide, and direct pupils rather than teach subjects.
7. That every activity is being called upon to show justification for its inclusion in the curriculum.
8. That social and economic factors have a great deal to do with the school response of a pupil.
9. That the school should have a pupil personnel division.
10. That teachers should have broad scientific attitudes.
11. That the objectives of industrial arts are justified as contributing to the general education of the pupil.
12. That there is a high correlation between general intelligence and achievements in industrial-arts shopwork.
13. That the avocational and vocational interests, and the selection and participation in industrial-arts activities of pupils are directly influenced by such social and economic factors as:
    - *a*) Loss of parents through death, divorce, or abandonment.
    - *b*) Nature and classification of parents' occupations.
    - *c*) After-school jobs and duties.
    - *d*) Home surroundings and background.

Suggestions for Further Study

1. Extent of vocational guidance in the junior high school industrial-arts shop.
2. Centers of interest for industrial arts.
3. Methods of industrial unit selection.
4. Methods for the selection of shop activities.
5. Interests of pupils in industrial-arts shops.
6. The functional extent of industrial-arts courses.
7. The function of industrial arts in modern education.
8. Social factors influencing industrial-arts courses.
9. How industrial arts contributes to the general education of the pupil.
10. What activities to teach in a general shop.
11. What and how to select industrial units for a general shop.
12. Some common industrial units being taught.

INDUSTRIAL ARTS & VOCATIONAL EDUCATION
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Can Our Vocational Schools Help The Blind?

GEORGE L. HOWEILER*

Unemployment is undoubtedly the most crucial problem which confronts the overwhelming majority of blind persons throughout the United States today. Truly heroic efforts are constantly being made by government, philanthropic organizations, and interested individuals to bring about its solution. Millions of dollars are spent each year in these efforts. In the final analysis, it is a problem toward which much of the work for the blind is directed. And yet, with all these efforts and monetary expenditures, only about 2500 out of an estimated total blind population of some 250,000 are actually earning a self-respecting livelihood in our competitive economic system.[1] That is to say, approximately 1 per cent of the blind in this country are making their own way, while the remaining 99 per cent are more or less dependent upon public or private assistance.

To the average layman, such a situation is entirely reasonable. He finds little difficulty in explaining it. Blindness to him means groping, stumbling, dire helplessness. It means a drastic curtailment of virtually all the activities to which man subscribes, especially those of an economic nature. True, blind persons have been known to play musical instruments, tune pianos, cane chairs, weave rugs, make baskets, and perform a number of similar tasks. But what of that? These are but minor occupations. Their remunerative possibilities are generally small. Besides, only a small proportion of the blind are capable of engaging in them. Thus, the unemployment situation is clearly unavoidable, and any suggestion to the contrary is pure buncombe. So reasons the average lay American.

But in this instance the general public is apparently quite ignorant of fact. While it is true that the remunerative possibilities of chair caning, basketry, and the like, are not promising, the popular belief that the blind are inevitably restricted to these is enormous. Blind persons can be found competing in almost every major branch of our economic order. The American Foundation for the Blind, for example, lists no fewer than 112 ordinary occupations in which such handicapped persons are employed, and there is good reason to believe that this list should be revised upward.[2] Because of its extent, this list cannot be conveniently included here. However, a fairly complete picture can

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[1] Clunk, J. F., "Employment Possibilities — Old and New," *Proceedings of the American Association of Instructors of the Blind*, 1940, p. 144.

[2] See bulletin, "Our Vocational Services," issued upon request by the American Foundation for the Blind, 15 W. 16th St., New York, N. Y.

be had from the results of a recent survey made by M. E. Frampton and H. G. Rowell of Teachers College, Columbia University. The survey tabulated in Figure 1 presents conclusive evidence that the blind, far from being limited to a few handicrafts, are capable of participating to a large extent in all major lines of economic enterprise.

List of Occupations	*Percentage of Employed Population*	*Percentage of Employed Blind*
Agriculture	26.3	13.2
Mining	2.6	.2
Manufacturing	30.8	43.1
Transportation	7.4	1.5
Trade	10.2	17.6
Public service	1.9	.5
Domestic service	8.2	5.5
Clerical service	7.5	3.9
Professions	5.2	14.0
Miscellaneous		.5

TABLE I.[3] Percentage of Employed Blind

The belief that only the select few, the 1 per centers, are capable of earning a self-respecting livelihood is likewise fallacious. According to most authoritative students of the problem, the proportion of employable blind is much greater than that which is actually employed. Dr. Harry A. Best, for instance, indicates that between 10 and 15 per cent are capable of achieving total self-support.[4] A similar estimate has been arrived at by Dr. Gabriel Farrell, director of Perkins Institution and the Massachusetts State School for the Blind.[5] Mr. Joseph F. Clunk, United States rehabilitation specialist for the blind, is even more optimistic. "On the basis of present-day definition of blindness," he writes, "we have every reason to assume that between 250,000 and 300,000 persons in this nation are blind and that from 20 to 25% of the group are employable."[6] Since only about 25 per cent of the blind are between the ages of 21 and 55,[7] his estimate therefore would seem to include all those of employable age. This estimate, however, is probably too high. In any case, it is safe to conclude that a much larger proportion of the blind are capable of making a living for themselves than is generally recognized.

Now, if the number of occupations available to blind persons is fairly extensive, and if at least half or more of the potentially employable blind are able to compete side by side with sighted persons, why are there only about 1 per cent of them doing so? Or, to ask this question differently, why are so many compelled to accept the taxpayer's money in the form of subsidies when they could and gladly would be self-supporting?

[3]From Frampton and Rowell, *Education of the Handicapped,* Vol. 11. Copyright, 1938, by World Book Co., Yonkers, N. Y.

[4]Best, H. A., *The Blind,* p. 46.

[5]Farrell, G., "Reflections From an Ivory Tower," *Proceedings of the AAIB,* 1940, p. 19.

[6]Clunk, J. F., "Employment Possibilities — Old and New," *Proceedings of the AAIB,* 1940, p. 144.

[7]Irwin, R. B., "The Blind and Resources for Their Aid," *What of the Blind?* Copyright by the American Foundation for the Blind, 1938.

Providing Vocational Training for the Blind

The problem of unemployment is linked largely to the problem of providing proper vocational training. As Dr. R. S. French has succinctly said, "the blind succeed best when their actual participation in a trade is preceded by a thorough apprenticeship or by an equally thorough trade training in a school fully equipped to give such education."[8] Blindness alone is a hurdle difficult enough to overcome. In conjunction with vocational unpreparedness, it is an almost insurmountable barrier to economic success.

Some idea of the extent of this vocational unpreparedness can be had from a recent study carried on in California. According to its findings, only 39.8 of the employed blind of that state had been trained for the occupation in which they were engaged at the time the survey was made, while 60.2 were reported as having had no training whatsoever. Since there is good reason to believe that the results of this study are representative of the nation as a whole, a more detailed examination of these results should be made. The results shown in Table II are self-explanatory.

Occupation	*Per Cent Trained For*	*Per Cent Followed*
Manufacturing and mechanics	5.2	11.9
Professions	8.1	36.6
Domestic service	1.9	3.9
Farming	2.6	3.5
Retail trades	0.0	32.8
Miscellaneous	22.0	11.3
No occupation	60.2	0.0

TABLE II.[9] Trained for Occupations

These are significant data. If over three fifths of the employed blind have had no previous training for their present occupations, is it not reasonable to presume that a similar lack of training prevails among the unemployed? Indeed, is it not reasonable to conclude that the proportion of unprepared unemployed blind persons is greater than that of the employed who had no specific preparation whatever? Small wonder that even in such an educationally progressive state as California "about 95 per cent of the blind have no earned income, and that a large proportion of the remaining 5 per cent derive their income from employment in sheltered workshops,"[10] thus, a thorough vocational training prior to actual participation in an occupation appears absolutely essential if the seriousness of this unemployment problem is to be substantially reduced.

Occupations for Which to Train

But how can the blind be given a thorough vocational training?

Tables I and II show that the majority are principally engaged in the professions, agriculture, trade, and manufacturing. Table I, for instance, reveals that 87.9 per cent of the employed blind are following these occupations. If public and clerical service are regarded as professional occupations, as they frequently are, this figure rises to 92.3 per cent. Virtually the same result is obtained from Table II. It is apparent, then, that a program for vocational preparation must be based primarily upon these types of occupations.

In regard to the professions, the matter of providing proper training is of no great concern. Our universities and colleges have been available to the blind almost from the beginning. With the aid of readers, blind youths encounter little difficulty in meeting the requirements of institution and family. In fact, many instances can be cited where such handicapped students have been graduated from schools of medicine, divinity, law, education, journalism, and business with the highest of honors. It should be borne in mind, however, that only the gifted can reap real success in these pursuits, and that the number of gifted blind persons is proportionately as small as the number of gifted sighted. Failure on the part of guidance counselors and educators to realize this has brought many a graduate of a school for the blind to disillusionment and despair.

Likewise, the matter of providing training in agriculture and related fields presents no serious obstacles. Agricultural schools and colleges are quite numerous and accessible. A number of blind students have been known to enroll in them from time to time. The chief difficulty here is that the majority of those who follow this group of occupations are, for one reason or another, unable to attend these schools and colleges. For them, however, Smith-Hughes training in a public school is both possible and practical. In those states where Smith-Hughes instruction is not offered or is limited to only a few schools, a certain amount of agricultural education can be provided for by the state institutions. If none of these is feasible, there still remains the alternative of correspondence courses. These are inexpensive and they can be made very practicable with the help of rehabilitation workers or home teachers.

As is quite apparent, the vocational preparation of blind persons for the professional and agricultural occupations is not a difficult matter. Rather, it is in the commercial and industrial occupations that the problem of providing proper vocational training really assumes large proportions. Here the conventional high school has little to offer in the way of a solution. Neither has the state institution, as it is generally organized today. To paraphrase the opinion of one authority, schools for the blind can only give prevocational ex-

[8]French, R. S., *From Homer to Helen Keller,* p. 201.

[9]"A Census and Economic Survey of the Blind in California," Department of Education, Bulletin No. 7 (1935).

[10]Perry, N. L., "The Possibilities for Remunerative Employment of the Blind in a Competitive Field," *Proceedings of the American Association of Workers for the Blind,* 1935, p. 45.

perience in a few broad fields and training in the basic skills common to the area chosen by the student for specialization."[11] This is very unfortunate, for these are the very occupations which hold out the greatest hope of economic success.

A suggestion has sometimes been made to the effect that regional vocational schools for the blind should be established. According to this plan, certain groups of states would cooperate in maintaining centrally located institutions. To these institutions, employable blind persons would be sent upon the recommendation of guidance committees or rehabilitation specialists. Here they would receive intensive training in one or more commercial and industrial occupations.

There is much to be said in favor of this suggestion. For example, trainees would have the benefit of highly specialized and efficient instruction. They would have the additional advantage of plant and equipment specially designed to meet their needs. However, this plan is not in keeping with the present trend of placing handicapped individuals whenever possible in ordinary schools, where their environment more nearly approximated real-life situations. Furthermore, it is doubtful whether states would agree to cooperate in such a venture, at least in the immediate future. Meanwhile something has to be done.

Apprenticeship As a Solution

In this connection the system of apprenticeship has been mentioned as a solution to the problem of providing vocational training. Unquestionably this would be the most satisfactory approach. From the standpoint of any prospective employee, blind or sighted, no training program carries with it quite the assurance of success as does one in which actual preparation for an occupation goes hand in hand with the actual participation in that occupation. The trouble, however, is that it is almost as difficult for a blind person to secure an apprenticeship as it is for him to secure a regular position. Most employers are hesitant about engaging a thoroughly trained individual if he is blind, to say nothing of one who is untrained. Besides, the system of apprenticeship has suffered a marked decline during the past half century, and it can seldom be revived for even the worthiest of causes.

But if the establishment of regional vocational schools for the blind is at best a development of the remote future, and if the apprenticeship system is not entirely feasible, what can be done to prepare the blind for commercial and industrial occupations?

There still remains the possibility of utilizing our regular vocational schools. Such schools are numerous. Virtually every large community has one or more. They are likely to become even more numerous as the needs of a steadily growing industrial society become increasingly felt. The extensiveness of their curriculums and the high degree of specialization among the schools themselves provide the pupil with ample opportunity for satisfactory selections in the light of his ability and circumstance. Their instructors are generally men and women of long experience, capable of offering practical suggestions of all kinds. Such suggestions would be of inestimable value to the blind. They would easily determine the difference between success and failure in an occupation.

Moreover, in a vocational school a blind person would stand shoulder to shoulder with the sighted. He would no longer move about in the sheltered atmosphere of paternalistic institutional life until graduation dashes him upon the cold rocks of reality. Instead, he would have the opportunity to adjust himself to the workaday world slowly and therefore with less difficulty. Most important of all, he would not only be receiving vocational training in those occupations which hold the greatest probable success, but he would be simultaneously educating those about him and the community in general as to the potentialities of the blind. And this is extremely important, for these very same fellow trainees in many instances would be instrumental in his getting a position.

Still, can a blind person attend an ordinary vocational school profitably?

This question was recently submitted to the principals of the vocational high schools in New York City. Of the 16 who responded, 12 went on record with a categorical, "No." Two were of the opinion that the blind could profit from such schools, but only after reorganization of curriculums and the establishment of special courses. Another went a step farther and stated that "provision should be made in vocational high schools to provide for this type of student."[12] Only one went so far as to declare emphatically, "They do, unquestionably."[13]

Can the Blind Profit From Vocational School Training?

Such a response is hardly encouraging. However, if the majority of vocational high school principals offer little hope to the blind, they can be readily forgiven. Their attention has probably never been called to this question. Blind children are seldom referred to vocational schools. For various reasons, these children are unusually shunted off into schools for the blind, where they tend to remain until graduation or withdrawal. Only 1 of the 16 vocational high schools mentioned above reported any such reference. Consequently, most principals of vocational schools have had no real occasion to consider the problem of the blind. Like the layman, they are likely to have no accurate knowledge as to what a blind person is capable of doing. In view of this, it is rather surprising and encouraging that as many as 4 of the 16 principals who replied to the question held positive viewpoints.

There is really little question that the blind can profit from most vocational high schools. Miss Grace Harper of the New York State Commission has reported the enrollment of several blind students in such schools. Many have also been enrolled in various private business colleges and schools of technology throughout the nation. On January 22 of this year Jessie A. Tritt and Frances Blend of the Los Angeles City schools reported 21 blind students in attendance at the Francis Polytechnic High School. "Blind persons," they believe, "could attend all such schools."

A specific example of a visually handicapped youth having been enrolled in a vocational high school has been made available by John F. Bledsoe, superintendent of the Maryland School for the Blind. In a communication dated December 5, 1940, Mr. Bledsoe wrote:

> Replying to your letter in regard to special training in vocational and industrial trade schools by one of our students, I beg to say that we sent one student who had shown a good deal of talent in the repair of radios to the Public Vocational School in Baltimore. He went to the school and accomplished in three years what ordinarily takes seeing boys four years to accomplish.
>
> He is now living at Federalsbourg, Maryland, and is engaged in the repair of radios. Apparently he is quite an expert although totally blind. His name is Maurice Mowbray.

What Maurice has accomplished in the field of radio repair, Tom, Dick, and Mary can duplicate in other fields. True, they may not always be able to follow in exact detail the requirements set forth by a particular vocational school. And they may even fall short of graduation. Yet even without diploma, the fact of their attendance at such a school plus the training they received would enhance their chances of occupational success considerably.

But what are some other fields besides radio repair suited to the blind? This is not an easy question. Much depends upon the individual concerned, organization of the vocational schools, and the philosophies and attitudes of the school authorities. It is a question that can be tentatively answered in a general way, however, by analyzing the courses offered in a school in the light of an occupational survey. Thus, by taking a course of study issued by the Department of Vocational Education in New York City and placing it in a juxtaposition to, let us say, the list of occupations compiled by the American Foundation for the blind, the following suitable fields suggest themselves:

Course	*School*
Auto Mechanics	ACDFHIPQ*
Clerical	K
Electrical Maintenance	AMQ
General Commercial	ADEHKNOUX
General Industrial	DQSVNO

[11] Frampton, M. E., and Rowell, H. G., *Education of the Handicapped*, Vol. 11, p. 153.

[12] Joseph, Daniel B., Principal of the Jamaica Vocational High School, New York City.

[13] Farnsworth, Edna A., Principal of Brooklyn High School for Homemaking, New York City.

Course	*School*
Home Nursing	ENVX
Household Arts	FMNWX
Leather Goods Mfg.	P
Machine Shop	ADFMPQSVWX
Merchandising of Foodstuffs.	U
Merchandising and Sales	K
Radio Mechanics	DMQSVW
Secretarial (Post Grad.)	K
Shoe Repairing	DS
Stenography and Typing	K

TABLE III. Occupational Fields Suitable for the Blind

It would be seen from this that blind boys and girls could profitably attend eighteen of New York's 24 vocational high schools. They could enroll in at least 15 major fields. With the aid of rehabilitation workers or special supervisors, both the number of schools and courses could undoubtedly be increased to include others not mentioned here. For that matter, such aid should be forthcoming in whatever form or degree necessary until satisfactory adjustments have been made by the student and proper pupil-pupil and pupil-teacher relationships established. A certain amount of reorganization in curriculum and administration would probably be essential in most cases. However that may be, no school should close its doors to the blind without conclusive proof that nothing can be done to assist these persons, for in a democratic society it is the duty of every school administrator to adapt his institution to the needs of the community and to the needs of each and every individual in that community.

Thus certain basic facts stand out clearly. As this study has shown, employment possibilities for those with severe visual handicaps are fairly numerous. The blind, contrary to popular opinion, are not doomed to charity or mendicancy. Many of them are capable of earning a self-respecting livelihood in virtually every economic activity. What is more, the number capable of doing so is not 1 per cent but 10 or 15 times that figure.

These employment possibilities are found mainly in agriculture, commerce, industry, and the professions. Of these, the commercial and industrial occupations are the most promising, accounting for approximately 64.6 per cent of all employed blind persons.

It was further shown that only a small proportion of the blind have been specifically trained for such occupations. In California, for example, less than one eighth of those employed in commerce and industry had been fully prepared in advance of their employment. That such previous preparation is both desirable and essential goes without saying. The question is, therefore, how this type of vocational training can best be provided.

Several suggestions follow. One of these entails the establishment of regional vocational schools for the blind. Another offers the possibility of a revived apprenticeship system, while a third looks toward the wider use of our regular vocational high schools.

Of these suggestions, the one calling for a more extensive use of vocational schools appears most encouraging. Certainly it is the most feasible plan of those suggested. Some schools, it will be recalled, have already demonstrated the practicability of training blind persons for commercial and industrial occupations, and there is no good reason why their number should not be increased. That their number will increase is quite certain, for educators the country over are steadily coming to recognize the fact that public schools should function in the interest of all children, exceptional as well as normal.

One thing should be kept in mind, however. The plan to provide occupational training for the blind by the utilization of vocational high schools is not to be regarded as a panacea. This problem of unemployment is far too complex to engender confidence in any one approach to its solution. A thorough vocational training in itself is no guarantee of success, nevertheless it does play a very important part. Since it does, every effort should be made in this direction. So, if interest has been aroused among even a few vocational school principals, superintendents of schools for the blind, rehabilitation specialists and other interested individuals, and if even a small amount of experimentation will grow out of this interest, then the cardinal aim of this study will have become realized.

*The letters represent the following schools: A — Bronx Vocational High School for Boys; C — Samuel Gompers Vocational High School; D — Brooklyn High School for Specialty Trades; E — Brooklyn High School for Homemaking; F — Brooklyn High School for Metal Trades; H — East New York Vocational High School; I — Brooklyn High School of Automotive Trades; K — Central Commercial High School; M — Metropolitan Vocational High School; N — Yorkville High School of Women's Service Trades; O — Manhattan High School of Women's Garment Trades; P — Murray Hill High School of Building and Metal Trades; Q — New York Vocational High School for Boys; S — Chelsea Vocational High School; U — Food Trades Vocational High School; W — Jamaica Vocational High School; V — Queens Vocational High School; X — McKee Vocational High School.

In-Service Instructor Training for War Production

JOHN R. PATLOW*

(Continued from page 147 of the April, 1942, issue)

e) If the small end bears, set the tailstock forward or toward the operator.

f) Repeat Operations *c*, *d*, and *e* until the taper is cut correctly.

Caution: Do not drop the gauge quickly on the taper because it will be difficult to turn the gauge.

g) Polish and correct any slight variations with a file.

INFORMATION UNIT NO. 25

Machine-Shop Technology — Prepared by Wm. N. Lathrop, Counselor

Grinding Clearance on Machine Cutting Tools

Objectives:

1. To learn the correct side clearance, front clearance, side rake, and back rake angles for grinding tool bits.

2. To become familiar with the equipment for grinding and sharpening tool bits and drills.

3. To become familiar with the various steps in grinding a tool bit.

4. To become familiar with the various shapes and uses of tool bits.

General Information: The tool bit is that part of the lathe, shaper, or planer tool which cuts the metal that must be removed to bring the work to the desired size and shape.

Tool bits are made of many kinds of carbon steel. The carbon content used by a manufacturer of the steel, plus the actual secret process of manufacturing this steel, is denoted by trade names with a few of which we shall become familiar in our machine-shop work. Tool bits are usually made of high speed steel, a few trade names of which are "Clarite," "Monax," and "Rex AAA." High speed or high carbon steel is much preferred as a cutter to the low carbon steel cutter because the actual cutting speed of high-speed steel is approximately twice that of the low-carbon steel. The development of this high-speed steel tool bit has, thus, more than doubled production.

The cutting tool is one of the most important things to consider in the machining of metal. In order to machine metal accurately and efficiently, it is important that the cutter or tool bit have a keen cutting edge, ground with the correct clearance, rake, etc., for the particular kind of metal being machined, and that the tool bit be set in the proper relationship to the work. The successful operation of a lathe, shaper, or planer turning out work of good quality, depends to a great extent on the skill of the operator in grinding his tools.

All cutting tools should be ground with a wet grinder or grinding wheel, or if ground dry, they should be frequently dipped in water to prevent annealing of the cutting edge.

Four angles are important in grinding tools.

*Vice-Principal, Milwaukee Vocational School, Milwaukee, Wis.

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